

THE IMPACT OF THE COVID-19 PANDEMIC ON FOOD VALUE CHAINS IN SOUTH AFRICA¹

INTRODUCTION

South Africa's food system was disproportionately affected by the Covid-19 restrictions. Some value chains fared much worse than others, while still others were not affected at all. In a nutshell, the agro-food system has been a tale of mixed fortunes. Providing an adequate picture of the effects of Covid-19 across the sector requires an assessment of both the value chains that were able to cope and those that were badly affected.

To illustrate the impacts of the pandemic on the food system, this case study presents a detailed analysis of three agricultural commodity value chains. They were chosen on the basis of three broad criteria – a critical food staple, a key import or export commodity, and a value chain with relatively high employment and high inclusion of smallholder farmers. Other considerations included the relative size of the industry and the need to show various aspects of the pandemic experience. On this basis, the following value chains were chosen:

- Maize as a staple food value chain
- Poultry as a key product reliant on imports
- Beef as a value chain with relatively high smallholder farm participation, which also relies on meat exports and weaner calf imports.

Table 1 shows the gross value of output, gross value added, trade, jobs, and the involvement of smallholder farmers for these three value chains. These are clearly among the largest industries in the agricultural sector, with relatively high levels of exports and imports. They also contribute significantly to agricultural employment. Smallholder participation is relatively high in the beef sector but much lower for the maize and poultry sectors (in terms of output, rather than farmer numbers).

Table 1: Key indicators of selected value chains, averages 2015 to 2019

Commodity value chain	Employment	Production value (R'000)	Black farmer share in output	Commercial farmers	Smallholder farmers	Household farmers
Maize	29 289	27 038 097	4,7%	21 024	162 583	975 776
Cattle	89 752	31 992 265	34,0%	13 601	123 443	1 174 696
Poultry	52 836	47 863 345	4,2%	8 629	1 026 751	1 035 381

Sources: DALRRD, 2020; NAMC, 2019; Stats SA, 2016

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MAIZE VALUE CHAIN

Maize is South Africa's biggest field crop. The local maize market has several unique features in an African context:

- There is a clear distinction between the *white and yellow maize* markets, the former being mainly for the human market and the latter mainly for feed and industrial use. The total consumption of white and yellow maize is evenly split (50% white and 50% yellow maize on average).
- The maize market works in a *liberalised environment* and is not hindered by ad hoc government interventions.
- A significant portion (about 80%) of South African maize is *genetically modified* and cannot easily be traded with other African countries because of policy restrictions.

The maize market value chain can be partitioned into five key nodes:

- primary producers
- silo owners (storage and handling)
- traders (including marketing functions such as transport and logistics)
- millers (processors), and
- consumers (wholesale, retail, and exports).

The maize value chain is typically simple, connecting maize farmers to wholesalers, millers of maize flour and feed, to retailers and exporters.

On 23 March 2020, just after government announced the intention to lock down the economy, South Africa's white maize prices increased by 24% within a few days to R3 981 per tonne, a price level last seen in 2016. There was a suspicion that this price shock was a response to the lockdown announcement, but this was not the only explanation. The price spike at the onset of the lockdown was driven by:

- The weakening of the South African rand against the US dollar (US\$/ZAR)
- Rising demand from the region, primarily Zimbabwe
- A period of increased demand because of panic buying by local consumers before the lockdown
- Decreasing stock of the old season's crop, before the new season's harvest started coming in.

As expected, the price volatility self-corrected after predictions of a bumper crop in South Africa for the 2020/21 season and as new deliveries of maize entered the market. It appears that the demand spike in Zimbabwe and South Africa's Covid-19 lockdown merely coincided, and the latter had little bearing on market movements beyond the effects on the exchange rate.

The impact of Covid-19 on South Africa's maize market has, in the main, been minimal. The market has been relatively stable, without any notable disruptions. After a big crop in the 2019/20 season, South Africa has enough maize to supply the domestic market, despite rising demand as cash-strapped consumers shift back to basic food staples (SAGIS, 2020). The feed market, however, has been negatively affected by the weakening demand for meat. The contraction in feedlot placements and in poultry and pork production, all of which rely on feed-intensive production systems, reduced the demand for animal feed. As the major source of energy in feed rations, maize feed use declined by 150 000 tonnes year-on-year in 2020. Soybean oilcake, which represents the major source of protein in the rations, declined by approximately 80 000 tonnes. The reduction in sunflower oilcake is smaller,

given that its high fibre content results in lower inclusion rates in poultry feed rations relative to soybean oilcake.

For white and yellow maize, the second-largest crop on record (15,3 million tonnes) pushed prices closer to export parity. Export prices in turn increased because of the weaker rand and higher world prices; thus, despite the bumper crop, prices increased modestly from 2019 levels. Other grain and oilseed prices increased significantly in 2020, mainly because of the weaker exchange rate. This supported an increase in the gross production value for all major field crops. The relative shift in prices also induces a shift in household consumption for key staples. White maize consumption increased by 5% year-on-year, while wheat consumption remained relatively flat.

Despite higher food consumption, the combination of reduced feed demand and the large expected crop left a substantial exportable surplus for maize. Short-term disruptions in the supply chain notwithstanding, the Bureau for Food and Agricultural Policy projects that maize exports could reach 2,7 million tonnes in the 2020/21 marketing season, comprising about 1,8 million tonnes of yellow maize, mostly destined for Asia, and about 1 million tonnes of white maize, destined mainly for the African region. The latter should be sufficient to supply significant volumes to southern Mozambique and Zimbabwe.

BEEF SUPPLY CHAIN

The beef industry is dualistic, comprising a large, developed commercial sector and an underdeveloped emerging sector. The commercial sector accounts for an estimated 60% of the total beef herd, while the informal sector accounts for about 40%. Beef production ranges from small farmers on a few hectares to large enterprises on large tracts of land. With about 40% of the national cattle herd in the informal sector, South Africa has a great opportunity for inclusive growth. Almost 80% of this herd is in the Eastern Cape (20%), KwaZulu-Natal (18%), the North West (16%), the Free State (13%), and Mpumalanga (11%) (Stats SA, 2019). The average herd size is, respectively, 13, 59, and 413 cattle for the communal sector, the small-scale sector, and the commercial sector.

Beef is a relatively expensive source of protein compared with alternatives such as chicken. Given the sensitivity of beef (and other meat) products to changes in consumer spending power, the contraction in real gross domestic product (GDP) per capita in the pandemic resulted in a decline in domestic demand for beef and other meat products. This decline was exacerbated by the restrictions imposed on the food service sector. Restaurants were allowed to open for delivery under alert level 4, but take-aways, drive-throughs and sit-down services remained closed until level 2. Restrictions on restaurant operations continued until 20 September 2020, when the country shifted to alert level 1. Statistics South Africa (Stats SA, 2017) estimates that about 10% of total food expenditure is attributed to the food service industry. Indications are that retail sales increased – some products were redirected into that market segment, albeit at lower prices than would typically be obtained from restaurants (as discussed below).

South African consumers have a natural preference for beef, but consumption levels remain well below the levels projected for 2020 before the pandemic. Despite the substantially weaker exchange rate, prices remained fairly stable year-on-year. Beef production is in an expansion cycle, with herds having been rebuilt over the past three years. Indications are that the good summer crop in 2020, which supported cash flow for producers with mixed enterprises, allowed farmers to rebuild more

aggressively. This limited the supply of beef in the market and mitigated price declines in a weaker demand environment, as is clear from the slaughter numbers, particularly in the early part of the lockdown. In April 2020, beef prices were 4% higher year-on-year, although the 2019 prices had been influenced by export restrictions because of foot-and-mouth disease. However, cold storage space filled up quickly, and despite some recovery in export demand in the second half of 2020, domestic demand weakness persisted, limiting price gains. The average annual price for 2020 was similar to that of 2019 but was accompanied by a reduction of 2,5% in slaughter volumes year-on-year.

From a regulatory perspective, foot-and-mouth disease outbreaks from 2019 to early 2020 meant that government was already implementing restrictions on cattle movements across provinces. Cattle farmers had to secure permits that indicated both the origin and the destination of the cattle. By the time Covid-19 containment measures were implemented in late March 2020, the industry was already accustomed to the restrictions on the movement of trucks, workers, animals, and products. The Covid-19 restrictions initially limited crowd numbers to 50 people, which imposed capacity restrictions on in-person attendance at livestock auctions. Foot-and-mouth disease controls had already triggered a shift towards catalogue rather than physical auctions, and with the added lockdown regulations, the industry soon adopted online auctions as a precautionary measure. The shift to an e-platform reportedly saw a 400% increase in bookings for online auctions from traditional agents during the lockdown. The practice of electronic trading was adopted by more of the large livestock auction houses and is now widely used in the industry. However, despite the beef market's transition to online wholesale trading, it will most likely become an alternative option rather than replace physical auctions in the short to medium run.

Abattoirs and meatpacking plants implemented three key strategies during the pandemic:

- Beef destined for the food service sector was diverted into *alternative marketing channels*. According to Meyer et al. (forthcoming), an initial spike in demand – driven by a combination of panic buying and hoarding at the onset of alert level 5 – saw most meatpackers introducing additional shifts or overtime working hours to meet demand. They also noted that some beef products (e.g., prime wholesale cuts) that would otherwise have been exported or sold to local restaurants were now sold in local markets at discounted prices. To shift the scale from bulk wholesale order packaging to retail units, packers repurposed traditional retail cuts to barbeque specials and created packaged combinations available at retailers. Thus, the pandemic necessitated flexibility in operations and marketing to adapt to alternative products and marketing channels in a relatively short time.
- Meatpackers made new sourcing arrangements for carcasses by selecting *alternative suppliers* (instead of their traditional suppliers or from their vertically integrated abattoirs) to obtain sufficient volumes to meet the surge in demand in the early stages of the lockdown.
- *Covid-19 protocols* were adopted in factories and meat plants; these included increased sanitary measures for vehicles, clean and safe transportation for workers to and from the plants, personal protective equipment for truck drivers, and splitting shifts to meet social distancing guidelines.

Although South Africa exports only 4% of its beef production, the industry's market differentiation strategy of 2016 proved critical in adding a level of resilience to the sector. This was mainly because the continued beef exports to Asia stabilised parts of the industry's market demand, especially for higher-value products. Beef exports continued to grow throughout the lockdown, and the Chinese

market opened just as domestic demand began to falter. With exports continuing unabated, the industry was spared the type of oversupply situation that confronted other major global suppliers.

The domestic food service and retail sector implemented two broad strategies:

- *Online sales and marketing strategies:* Firms generally shifted to online platforms and e-commerce to ensure social distancing and reduce the risk of exposure to Covid-19. Meyer et al. (forthcoming) note that supermarkets increased their sales through e-commerce under alert level 5. Farmers, abattoirs, and packers used websites and social media to promote direct sales.
- *Home deliveries:* During alert level 4, home-delivered meals became the only way for quick-service restaurants to generate revenue. After alert level 3, the regulations were relaxed to allow a limited number of people to eat while sitting in restaurants, but sales remained subdued. Revenue growth was restricted by weak buying power and the reluctance of many consumers to visit public places. Therefore, home-delivered food became an increasingly dominant strategy.

Meyer et al. (forthcoming) point out that some restaurants also expanded their product offering by selling prepared raw meat for consumers to barbecue at home. All retail spaces, including restaurants, operated under standard protocols on social distancing and personal protective equipment.

BROILER VALUE CHAIN

South Africa's poultry industry is the largest subsector in the agricultural economy, worth R47,9 billion of gross value added or 16,5% of total agricultural GDP. The country produces an average of 1,7 million tonnes of poultry meat against consumption requirements of 2,2 million tonnes. This means that South Africa, like most parts of Africa, is a net importer of poultry meat. Broiler meat is produced throughout the country, with 62% of production coming from the North West (22%), the Western and Northern Cape (19%), and Mpumalanga (21%). The structure of production is both dual and diverse, with a highly concentrated set of large-scale integrated firms on the one hand and a heterogenous set of small producers on the other. The poultry sector is capital-intensive, which presents high barriers to entry particularly for smaller producers. In fact, an estimated 1,04 million households (around 9% of the population) are active small-scale commercial and subsistence poultry producers. An estimated 88% of poultry production comes from the large-scale commercial sector. Smallholder commercial production comprises 5% of the sector, and 4% comes from the depopulation of layer and breeder stock at the end of the cycle.

Broiler meat production is marketed through two channels:

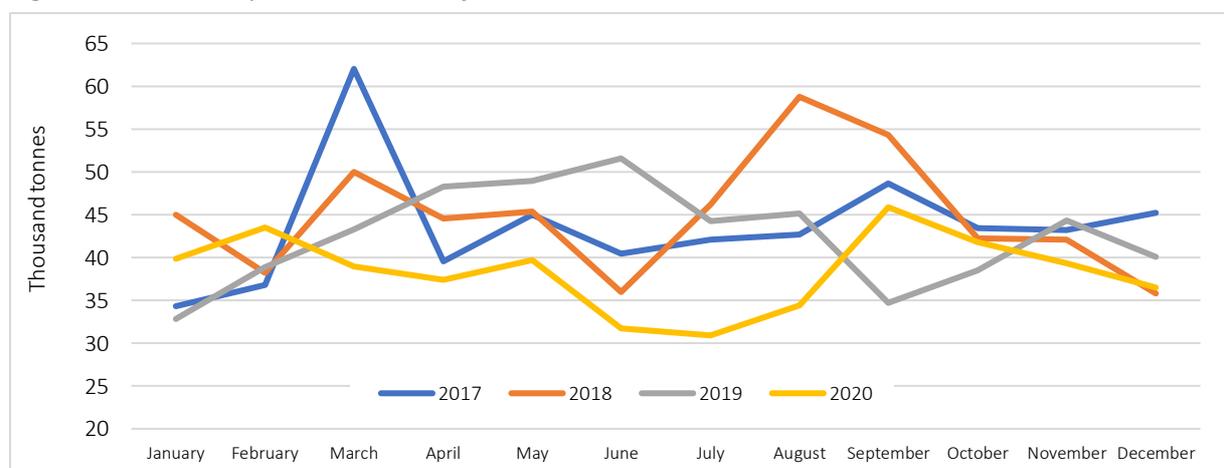
- The *informal chicken market*, which is typically dominated by an informal supply chain where the wholesale or retail of whole (live) birds is done by small-scale farmers, usually marketed via farm-gate sales, hawkers, and small retailers.
- The *formal, large-scale, commercial broiler farmers*, who produce chickens as contract growers for integrated poultry processors, which are also involved in breeding and feed and input supplies. With this value chain dominated by large-scale, integrated processors, the slaughter, processing, packing, and sale of fresh, frozen, or further-processed chicken are all done by integrated subsidiary units that sell to retailers or further processors or export the chicken products. This accounts for a major share of the formal broiler meat value chain.

The South African poultry industry has been in an expansionary cycle over the past two years – when Covid-19 struck, the industry had already started expanding production. However, demand weakened substantially when the food service industry, which accounts for about 20% of the domestic market, was closed during the lockdown. A substantial share of the demand for poultry comes from quick-service restaurants, which have a significant base of take-away clients. This, combined with the inexpensive nature of poultry in the meat consumption basket, supported some recovery in demand levels once lockdown restrictions eased, particularly from alert level 3 onwards. The industry also diverted some of the products that might normally have been destined for quick-service restaurants into the retail market, resulting in lower import volumes year-on-year. Of concern to the industry is the potential for a prolonged period of weak consumer spending power and high poultry product stocks in the global market.

The main factor affecting the poultry sector was the closure of quick-service restaurants and the hotel and hospitality industry during alert level 5. What made Covid-19 exceptional was that it affected both the supply and the demand side of the value chain. On the one hand, the initial closure of quick-service restaurants saw weakening demand and softening of farm producer prices because of what would inevitably be an oversupply of the retail market. During the 21-day lockdown under alert level 5, processors had insufficient storage as stock accumulated. However, the supply side of the value chain had to adapt to the Covid-19 health protocols and new standard operating procedures; this created inefficiencies in the supply chains, which pushed up retail prices over time. Overall, the transmission of price effects significantly depended on the processing segments of the value chain, and to a fair extent, on the balance of effects of Covid-19 on the supply and demand sides of the food system. Another factor is global price levels. With over 15% of domestic poultry consumption typically imported, world prices also affect domestic poultry prices – the cost of domestic products is curtailed by the price of imports. In this regard, the depreciation of the exchange rate more than offset weaker international prices, leading to higher prices for imported products.

Port congestion also affected import volumes. In some respects, this aided the poultry industry, as it limited the oversupply in the market at a time when demand was particularly weak. Import volumes have largely remained below the volumes of recent years since March 2020 (Figure 1).

Figure 1: Chicken imports into South Africa, 2017 to 2020



Source: Compiled from ITC, 2020

Like other sectors in the agricultural industry, the poultry sector has had to adhere to social distancing rules and standard health and operating protocols. This had three main effects:

- *Lower labour productivity*, particularly at processing level, where social distancing rules meant fewer workers across the floor space at a given time
- Stricter health regulations and higher levels of hygiene at abattoirs and processing sites, which *increased the costs of production*
- Interprovincial restrictions on the movement of labour, which may have contributed to *lower hiring* than the sector could potentially have absorbed in a year.

The broiler industry employs roughly 49 887 people: the hatchery and poultry-rearing industries account for about 15 013 and the processing sector for about 28 578. The broiler wholesale and retail distribution part of the chain employs 6 296 people. The ancillary segments of the chain (i.e., maize and soybean production and trade linkages through the feed industry) account for about 18 817 jobs.

The quick-service restaurant sector employed an estimated 330 385 people before the pandemic, virtually all of whom were negatively affected by the hard lockdown under alert levels 5 and 4. Many of these employees were contracted on a no-work-no-pay basis or relied on gratuities and tips from clients. Thus, most workers in this industry did not earn an income during alert levels 5 and 4. When restaurants began to open under strict health regulations and social distancing measures, many employers were unable to retain these jobs. Some downsized, but others were forced to close.

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